

## PATENT ABSTRACTS OF JAPAN

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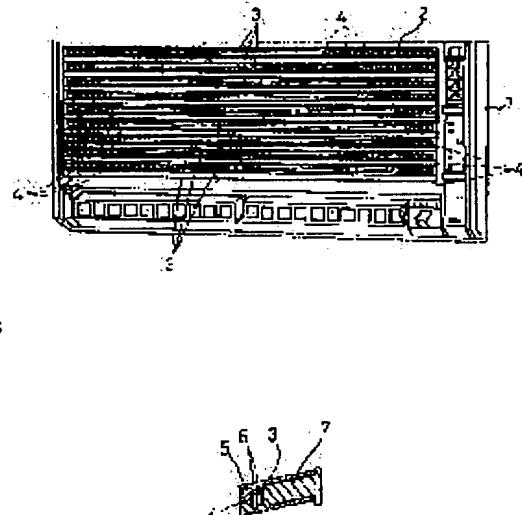
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 (22)Date of filing : 24.11.1998 (72)Inventor : MORISHITA ISAYA

## (54) AIR CONDITIONER

## (57)Abstract:

PROBLEM TO BE SOLVED: To provide decorative light emission on a grating-like part of a front panel and to enhance decorativeness of an air conditioner body, by respectively mounting a plurality of light emitting elements at a plurality of gratings of the panel provided on a front surface of the body, and emitting lights from the elements.

SOLUTION: A plurality of light emitting elements 4 are respectively mounted at a plurality of gratings 3 of a front panel 2 provided on a front surface of an air conditioner body 1. Lights are emitted from the elements 4, and hence a light emitting decoration is functioned. That is, a plurality of partition chambers 5 are formed at the gratings 3, and the elements 4 are respectively embedded in the chambers 5. Further, after a double-sided flexible board 6 is arranged on a back surface side of the element 4, a retaining member 7 made of a synthetic resin is engaged with each chamber 5, and the element 4 is fixed in each chamber 5. The board 6 is connected to a board arranged on a rear surface side of the panel 2, and this board is connected to a power source to energize the elements 4 to emit lights from the elements 4.



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## CLAIMS

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[Claim(s)]

[Claim 1] The air conditioner characterized by having attached two or more light emitting devices in two or more grid sections of the front panel established in the front face of a rotary condenser body, and considering as the configuration which gave the luminescence ornament by making these light emitting devices emit light.

[Claim 2] Said two or more grid sections are air conditioners according to claim 1 characterized by having formed with transparency or translucent synthetic resin, having formed two or more compartments in the grid section of these plurality, having embedded said light emitting device in the compartment of these plurality, respectively, having inserted the presser-foot member in said each compartment further, and fixing said light emitting device in said each compartment.

[Claim 3] The electrode of each of said light emitting device is an air conditioner according to claim 2 characterized by constituting so that light may be emitted in said each light emitting device by making a double-sided flexible substrate intervene in piles between said each light emitting device and said each presser-foot member, connecting with the substrate which arranged this double-sided flexible substrate in the background of said front panel, and connecting this substrate to a power source.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates two or more grid sections of the front panel established in the front face of a rotary condenser body to the air conditioner which was made

to give a luminescence ornament by the light emitting device.

[0002]

[Description of the Prior Art] In the conventional air conditioner, in order to carry out inhalation of air, the front panel section used as an inlet was formed in the shape of a grid, and had prepared two or more steps of slits. For this reason, there was a problem that other functions, such as an ornament, could not be added to the grid-like part of this front panel section.

[0003] Moreover, it is in some which were indicated by JP,61-189132,U as a conditioner which gave the conventional ornament. This is arranging the lightning plotting board 107 equipped with at least two light-emitting parts 112a-112f (refer to drawing 5) made as [ blink / according to the predetermined flashing pattern set to the proper place of front-panel P of this conditioner with regards to the operational status of this conditioner ] in the conditioner which had indoors front-panel P which has the blow-off section 101 of harmony air and a control panel 102, or its either, as shown in drawing 4. However, in this, since the tooth space which arranges the lightning display 107 in front-panel P was restricted small, this lightning display 107 also had the problem of becoming small.

[0004] Moreover, there are some the manufacture approach of an electrical scoreboard was indicated to be in JP,4-122981,A. This arranges an emitter 214 in the outside surface of the structure of ad pillar 210 grade in the shape of a matrix at a large number, it connects an emitter 214 so that an array-like circuit may be constructed in the interior of the structure of ad pillar 210 grade, and he is trying to connect an array-like circuit to the drive equipment 218 for effectuating an emitter 214 alternatively through two or more electric wires 222 and 224, as shown in drawing 6 and drawing 7. However, it includes in the structure of ad pillar 210 grade at an outside surface, and this lightning plotting board cannot be included in an air conditioner.

[0005] Moreover, the operator volition display for automobiles is indicated by JP,5-94138,A. This forms the equipment which displays an alphabetic character on fixed or fluid type inside the automobile posterior part aperture 302, as shown in drawing 8 and drawing 9. It equips so that it can be operated with the switch 308 which prepared this near an operator's control lever. During operation, on the occasion of "passing", "passing", or "interruption", it constitutes so that the alphabetic character which displays "thank you for your consideration's [ "I'm sorry" and "thank you", ]" etc. operation volition or feeling of an operator may be displayed with the character display 305, such as an LED board, IC, or a liquid crystal plate. However, those display purposes completely differed and this operator volition display for automobiles had them, in order to prepare inside the posterior part aperture 302 of an automobile and to have included in the air conditioner. [ inconvenient ]

[0006] Moreover, the light emitting diode lamp and the light emitting diode display are indicated by JP,5-198843,A. This light emitting diode lamp and a light emitting diode indicating equipment are making the luminescence side side of the light emitting diode 405 which constitutes the rectification bridge circuit 403 in the using [ as light emitting diode 405 ]-diode which constitutes rectification bridge circuit 403, and luminescence side side of these light emitting diodes 405 intermingled in a lamp or a light emitting diode indicating equipment equipped with two or more light emitting diodes 405 and rectification bridge circuits 403, as shown in drawing 11 and drawing 12. However, since it was possible only to the small front panel of a tooth space in order to have built this light emitting diode lamp and a light emitting diode display into the side front of an air conditioner, there was a problem that this display itself was restricted to a small thing.

[0007]

[Problem(s) to be Solved by the Invention] This invention can solve the above-mentioned conventional problem, can give the ornament which emits light into the grid-like part of the front panel into which the area of most by the side of the front face of a rotary condenser body is closed, can interior-ize a rotary condenser body, and aims at offering the air conditioner which can be enjoyed as an interior in addition to an original air conditioning function.

[0008]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, invention according to claim 1 is characterized by having attached two or more light emitting devices in two or more grid sections of the front panel established in the front face of a rotary condenser

body, and considering as the configuration which gave the luminescence ornament by making these light emitting devices emit light. Invention according to claim 2 is characterized by having formed said two or more grid sections with transparency or translucent synthetic resin, having formed two or more compartments in the grid section of these plurality, having embedded said light emitting device in the compartment of these plurality, respectively, having inserted the presser-foot member in said each compartment further, and fixing said light emitting device in said each compartment.

[0009] Invention according to claim 3 is characterized by constituting so that light may be emitted in said each light emitting device by the electrode of each of said light emitting device making a double-sided flexible substrate intervene in piles between said each light emitting device and said each presser-foot member, connecting it to the substrate which arranged this double-sided flexible substrate in the background of said front panel, and connecting this substrate to a power source.

[0010]

[Embodiment of the Invention] Hereafter, the gestalt of operation of the air conditioner concerning this invention is explained, referring to drawing. The partial front view of each grid section of the front panel [ in / drawing 1 , and / in drawing 2 / the air conditioner of an operation gestalt ] and drawing 3 are the expanded sectional views showing the structure in each compartment in each grid section shown in drawing 2 . [ the front view of the air conditioner of the operation gestalt of this invention ]

[0011] As shown in drawing 1 , the air conditioner of this operation gestalt attaches two or more light emitting devices 4 (refer to drawing 3 ) in two or more grid sections 3 of the front panel 2 established in the front face of the rotary condenser body 1, and is taken as the configuration which gave the luminescence ornament by making these light emitting devices 4 emit light. And as two or more grid sections 3 are formed with transparency or translucent synthetic resin and it is shown in drawing 2 As two or more compartments 5 are formed in the grid section 3 of these plurality and it is shown in drawing 3 A light emitting device 4 is embedded in the compartment 5 of these plurality, respectively, the presser-foot member 7 which arranges the double-sided flexible substrate 6 which constitutes the electrode of each light emitting device 4, and is from synthetic resin on the tooth-back side of a light emitting device 4 further is inserted in each compartment 5, and the light emitting device 4 is fixed in each compartment 5.

[0012] Furthermore, by connecting this double-sided flexible substrate 6 to the substrate 8 arranged in the background of the front panel 2, and connecting this substrate 8 to a power source (illustration abbreviation), as shown in drawing 3 , the electrode of each light emitting device 4 consists of conditions of having made the double-sided flexible substrate 6 intervening in piles between each light emitting device 4 and each presser-foot member 7 so that light may be emitted in each light emitting device 4, as shown in drawing 2 . In addition, he makes connection with a substrate 8 from the double-sided flexible substrate 6, and connection with an electrode from a substrate 8 by the board connector 9, and is trying to correspond to closing motion of the front panel 2.

[0013] Moreover, although not illustrated, the controller which is a control section for making each light emitting device 4 emit light is attached in the front panel 2. In the air conditioner of this operation gestalt, it is good by making each light emitting device 4 turn on to use it for it, as a pattern etc. is displayed on the front panel 2 or a room temperature, the status display of an air conditioner, etc. are performed to it.

[0014] By embedding and attaching a light emitting device 4 in two or more grid sections 3 of the front panel 2 established in the front face of the rotary condenser body 1 according to the air conditioner of this operation gestalt Since the ornament of two or more grid sections 3 of the front panel 2 which close most front faces of the rotary condenser body 1 according to lighting of a light emitting device 4 to the whole almost can be given, the rotary condenser body 1 can be interior-ized and, in addition to an original air conditioning function, it can be enjoyed as an interior.

[0015]

[Effect of the Invention] Since two or more light emitting devices are attached in two or more

grid sections of the front panel established in the front face of a rotary condenser body and it was made to make these light emitting devices emit light as explained above according to invention according to claim 1 The ornament which emits light into the grid-like part of the front panel into which the area of most by the side of the front face of a rotary condenser body is closed can be given, a rotary condenser body can be interior-ized, and, in addition to an original air conditioning function, it can be enjoyed as an interior.

[0016] By according to invention according to claim 2, forming two or more grid sections with transparency or translucent synthetic resin, forming two or more compartments in the grid section of these plurality, embedding and pressing down a light emitting device and inserting a member in the compartment of these plurality Since it can embed where each light emitting device is certainly fixed in the compartment of the plurality of two or more grid sections, since the light emitting device was fixed in each compartment, and a light emitting device is embedded, respectively and it can fix in the compartment of the plurality of further two or more grid sections By each [ these ] light emitting device, the pattern with two or more various luminescent color from two or more grid sections of the front panel can be displayed, various patterns can be displayed or a room temperature, the status display of an air conditioner, etc. can be performed.

[0017] Since according to invention according to claim 3 a double-sided flexible substrate is made for the electrode of each light emitting device to intervene between each light emitting device and each presser-foot member in piles, it connects with the substrate which arranged this double-sided flexible substrate in the background of the front panel and this substrate was connected to the power source, structure is easy and can consider as the structure corresponding to closing motion of the front panel.

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#### DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the front view of the air conditioner of the operation gestalt of this invention.

[Drawing 2] It is the partial front view of each grid section of the front panel in the air conditioner of an operation gestalt.

[Drawing 3] It is the expanded sectional view showing the structure in each compartment in each grid section shown in drawing 2 .

[Drawing 4] It is the perspective view of the air conditioner which gave the conventional ornament.

[Drawing 5] It is the perspective view showing the ornament part of the conventional air conditioner shown in drawing 4 .

[Drawing 6] It is the perspective view showing the conventional lightning plotting board.

[Drawing 7] It is the partial front view showing the emitter of the conventional lightning plotting board shown in drawing 6 .

[Drawing 8] It is the perspective view of the automobile posterior part which has arranged the

conventional operator volition display for automobiles.

[Drawing 9] It is the circuit diagram of the conventional operator volition display for automobiles.

[Drawing 10] It is the circuit diagram showing the conventional light emitting diode lamp.

[Drawing 11] It is the front view showing the display side of the conventional light emitting diode lamp.

[Description of Notations]

- 1 Rotary Condenser Body
- 2 Front Panel
- 3 Grid Section
- 4 Light Emitting Device
- 5 Compartment
- 6 Double-sided Flexible Substrate
- 7 Presser-Foot Member
- 8 Substrate

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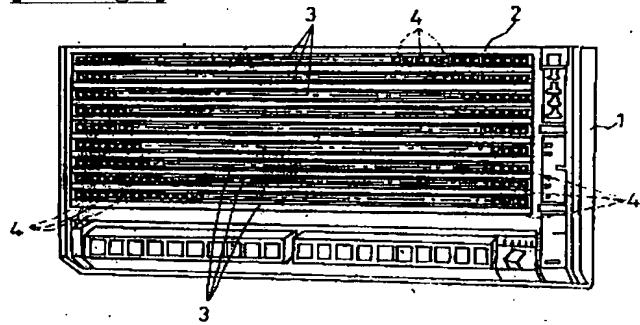
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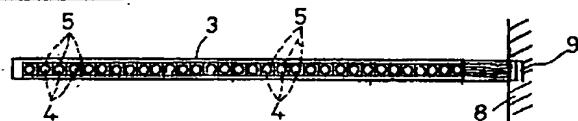
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DRAWINGS

[Drawing 1]



[Drawing 2]



[Drawing 3]

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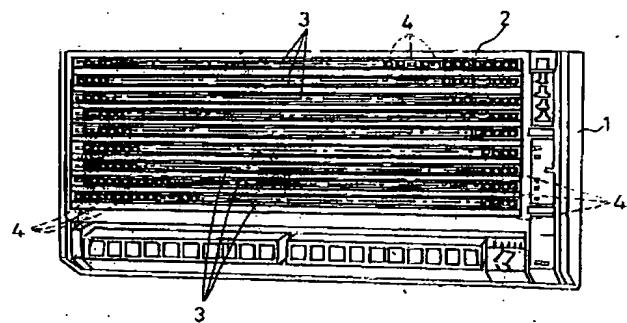
Fターム(参考) 3L051 BJ10

(54)【発明の名称】 空気調和機

(57)【要約】

【課題】 調和機本体の前面側の大部分の面積をしめるフロントパネルの格子状部分に発光する装飾を施すことができ、調和機本体をインテリア化することができ、本来の冷暖房機能に加えてインテリアとして楽しむことができる空気調和機を提供する。

【解決手段】 調和機本体1の前面に設けられるフロントパネル2の複数の格子部3に、複数の発光素子4を取付けて、これら発光素子4を発光させることによって発光装飾を施した構成とした。



## 【特許請求の範囲】

【請求項1】 調和機本体の前面に設けられるフロントパネルの複数の格子部に、複数の発光素子を取付けて、これら発光素子を発光させることによって発光装飾を施した構成としたことを特徴とする空気調和機。

【請求項2】 前記複数の格子部は、透明又は半透明の合成樹脂で形成し、これら複数の格子部に複数の区画室を形成し、これら複数の区画室内に前記発光素子をそれぞれ埋め込み、更に押さえ部材を前記各区画室に嵌入して、前記発光素子を前記各区画室内に固定したことを特徴とする請求項1に記載の空気調和機。

【請求項3】 前記各発光素子の電極は、両面フレキシブル基板を重ねて前記各発光素子と前記各押さえ部材との間に介在させ、この両面フレキシブル基板を前記フロントパネルの裏側に配設した基板に接続して、この基板を電源に接続することによって、前記各発光素子を発光するように構成したことを特徴とする請求項2に記載の空気調和機。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】 本発明は、調和機本体の前面に設けられるフロントパネルの複数の格子部を、発光素子によって発光装飾を施すようにした空気調和機に関する。

## 【0002】

【従来の技術】 従来の空気調和機では、吸気口となるフロントパネル部は、吸気するために、格子状に形成して複数段のスリットを設けていた。このために、このフロントパネル部の格子状部分に装飾等の他の機能を付加することができないという問題があった。

【0003】 また、従来の装飾を施した空気調和装置として、実開昭61-189132号公報に記載されたものがある。これは、図4に示すように、室内に調和空気の吹出部101及びコントロールパネル102又はそのいずれかを有する前面パネルPを備えた空気調和装置において、この空気調和装置の前面パネルPの適所に、この空気調和装置の運転状態に関係して定められた所定点滅パターンに従って点滅するようになされた少なくとも二個の発光部112a～112f(図5参照)を備えた電光表示板107を配設している。ところが、これにおいては、前面パネルPにおける電光表示部107を配設するスペースが小さく限られているために、この電光表示部107も小さくなるという問題があった。

【0004】 また、特開平4-122981号公報には、電光掲示板の製造方法が記載されたものがある。これは、図6、図7に示すように、広告塔210等の構造物の外表面に多数に発光体214をマトリックス状に配設し、発光体214を広告塔210等の構造物の内部においてアレイ状回路を組むよう結線し、アレイ状回路を、発光体214を選択的に発効させるためのドライブ

装置218へ複数の電線222、224を介して接続するようしている。ところが、この電光表示板は、広告塔210等の構造物に外表面に組み込むものであって、空気調和機に組み込むことは不可能であった。

【0005】 また、特開平5-94138号公報には、自動車用運転者意志表示装置が記載されている。これは、図8、図9に示すように、自動車後部窓302の内側に文字を固定式又は流動式に表示する装置を設け、これを運転者の操縦ハンドル近傍に設けたスイッチ308により操作できるよう装置し、運転中「追越し」、「追抜き」又は「割り込み」等に際し、「ごめんなさい」、「ありがとう」又は「おねがいします」等の運転者の操縦意志又は感情を表示する文字をLEDボード、IC又は液晶板等の文字表示装置305をもって表示するよう構成している。ところが、この自動車用運転者意志表示装置は、自動車の後部窓302の内側に設けるものであって、空気調和機に組み込むには、その表示目的が全く異なり、不都合なものであった。

【0006】 また、特開平5-198843号公報には、発光ダイオードランプ及び発光ダイオード表示装置が記載されている。この発光ダイオードランプ及び発光ダイオード表示装置は、図11、図12に示すように、複数個の発光ダイオード405と整流ブリッジ回路403とを備えたランプまたは発光ダイオード表示装置において、整流ブリッジ回路403を構成するダイオードを発光ダイオード405としたことおよびこれら発光ダイオード405の発光面側に整流ブリッジ回路403を構成する発光ダイオード405の発光面側を混在させている。ところが、この発光ダイオードランプ及び発光ダイオード表示装置を空気調和機の表側に組み込むには、スペースの小さい前面パネルにだけ可能であるので、この表示装置そのものが小さいものに限られるという問題があった。

## 【0007】

【発明が解決しようとする課題】 本発明は、上記従来の問題を解消し、調和機本体の前面側の大部分の面積をしめるフロントパネルの格子状部分に発光する装飾を施すことができ、調和機本体をインテリア化することができ、本来の冷暖房機能に加えてインテリアとして楽しむことができる空気調和機を提供することを目的としている。

## 【0008】

【課題を解決するための手段】 上記目的を達成するため、請求項1に記載の発明は、調和機本体の前面に設けられるフロントパネルの複数の格子部に、複数の発光素子を取付けて、これら発光素子を発光させることによって発光装飾を施した構成としたことを特徴としている。請求項2に記載の発明は、前記複数の格子部は、透明又は半透明の合成樹脂で形成し、これら複数の格子部に複数の区画室を形成し、これら複数の区画室内に前記発光

素子をそれぞれ埋め込み、更に押さえ部材を前記各区画室に嵌入して、前記発光素子を前記各区画室内に固定したことを特徴としている。

【0009】請求項3に記載の発明は、前記各発光素子の電極は、両面フレキシブル基板を重ねて前記各発光素子と前記各押さえ部材との間に介在させ、この両面フレキシブル基板を前記フロントパネルの裏側に配設した基板に接続して、この基板を電源に接続することによって、前記各発光素子を発光するように構成したことを特徴としている。

【0010】

【発明の実施の形態】以下、本発明に係る空気調和機の実施の形態について、図を参照しつつ説明する。図1は本発明の実施形態の空気調和機の正面図、図2は実施形態の空気調和機におけるフロントパネルの各格子部の部分正面図、図3は図2に示す各格子部における各区画室内の構造を示す拡大断面図である。

【0011】本実施形態の空気調和機は、図1に示すように、調和機本体1の前面に設けられるフロントパネル2の複数の格子部3に、複数の発光素子4（図3参照）を取付けて、これら発光素子4を発光させることによって発光装飾を施した構成としている。そして、複数の格子部3は、透明又は半透明の合成樹脂で形成し、図2に示すように、これら複数の格子部3に複数の区画室5を形成し、図3に示すように、これら複数の区画室5内に発光素子4をそれぞれ埋め込み、更に発光素子4の背面側に各発光素子4の電極を構成する両面フレキシブル基板6を配設して合成樹脂からなる押さえ部材7を各区画室5に嵌入して、発光素子4を各区画室5内に固定している。

【0012】更に、各発光素子4の電極は、図3に示すように、両面フレキシブル基板6を重ねて各発光素子4と各押さえ部材7との間に介在させた状態で、図2に示すように、この両面フレキシブル基板6をフロントパネル2の裏側に配設した基板8に接続して、この基板8を電源（図示略）に接続することによって、各発光素子4を発光するように構成している。尚、両面フレキシブル基板6から基板8への接続と、基板8から電極への接続はボードコネクタ9で行って、フロントパネル2の開閉に対応するようにしている。

【0013】また、図示しないが、フロントパネル2には、各発光素子4を発光させるための制御部であるコントローラが取付けられている。本実施形態の空気調和機では、各発光素子4を点灯させることによって、フロントパネル2に絵柄等を表示したり、室温や空気調和機の状態表示等を行うようにして使用するといい。

【0014】本実施形態の空気調和機によれば、調和機本体1の前面に設けられるフロントパネル2の複数の格子部3に、発光素子4を埋め込んで取り付けることにより、調和機本体1の前面の大部分をしめるフロントパネ

ル2の複数の格子部3のほぼ全体に発光素子4の点灯による装飾を施すことができるので、調和機本体1をインテリア化して、本来の冷暖房機能に加えてインテリアとして楽しむことができる。

【0015】

【発明の効果】以上説明したように、請求項1に記載の発明によれば、調和機本体の前面に設けられるフロントパネルの複数の格子部に、複数の発光素子を取付けて、これら発光素子を発光させるようにしたので、調和機本体の前面側の大部分の面積をしめるフロントパネルの格子状部分に発光する装飾を施すことができ、調和機本体をインテリア化することができ、本来の冷暖房機能に加えてインテリアとして楽しむことができる。

【0016】請求項2に記載の発明によれば、複数の格子部を透明又は半透明の合成樹脂で形成してこれら複数の格子部に複数の区画室を形成し、これら複数の区画室内に発光素子を埋め込んで押さえ部材を嵌入することによって、発光素子を各区画室内に固定したので、各発光素子を複数の格子部の複数の区画室内に確実に固定した状態で埋め込むことができ、更に、複数の格子部の複数の区画室内に発光素子をそれぞれ埋め込んで固定できるので、これら各発光素子によってフロントパネルの複数の格子部から複数の発光色の様々な模様を表示することができ、様々な絵柄を表示したり、室温や空気調和機の状態表示等を行なうことができる。

【0017】請求項3に記載の発明によれば、各発光素子の電極を、両面フレキシブル基板を重ねて各発光素子と各押さえ部材との間に介在させて、この両面フレキシブル基板をフロントパネルの裏側に配設した基板に接続して、この基板を電源に接続するようにしたので、構造が簡単であり、且つフロントパネルの開閉に対応した構造とすることができる。

【図面の簡単な説明】

【図1】本発明の実施形態の空気調和機の正面図である。

【図2】実施形態の空気調和機におけるフロントパネルの各格子部の部分正面図である。

【図3】図2に示す各格子部における各区画室内の構造を示す拡大断面図である。

【図4】従来の装飾を施した空気調和機の斜視図である。

【図5】図4に示す従来の空気調和機の装飾部分を示す斜視図である。

【図6】従来の電光表示板を示す斜視図である。

【図7】図6に示す従来の電光表示板の発光体を示す部分正面図である。

【図8】従来の自動車用運転者意志表示装置を配置した自動車後部の斜視図である。

【図9】従来の自動車用運転者意志表示装置の回路図である。

【図10】従来の発光ダイオードランプを示す回路図である。

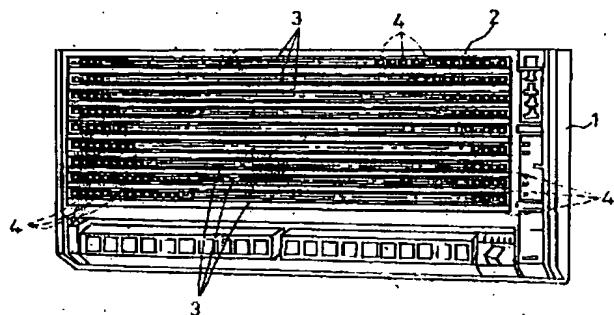
【図11】従来の発光ダイオードランプの表示部側を示す正面図である。

【符号の説明】

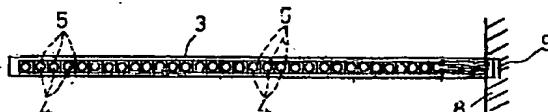
1	調和機本体
2	フロントパネル

3	格子部
4	発光素子
5	区画室
6	両面フレキシブル基板
7	押さえ部材
8	基板

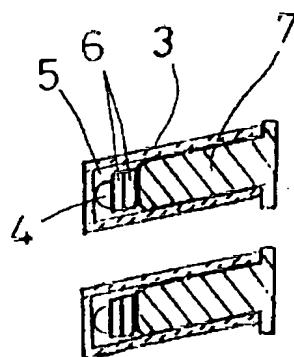
【図1】



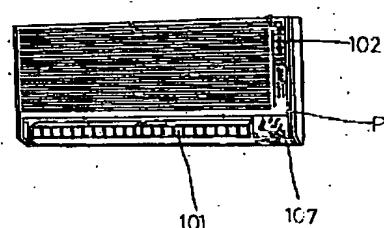
【図2】



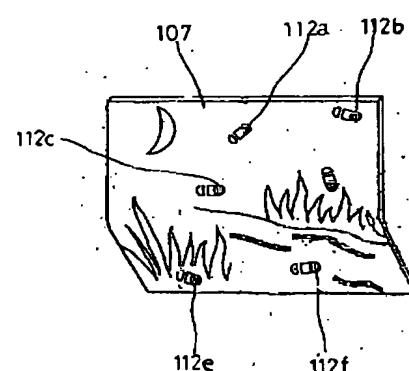
【図3】



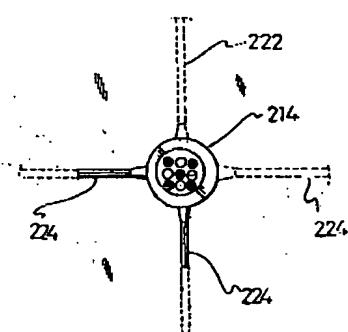
【図4】



【図5】



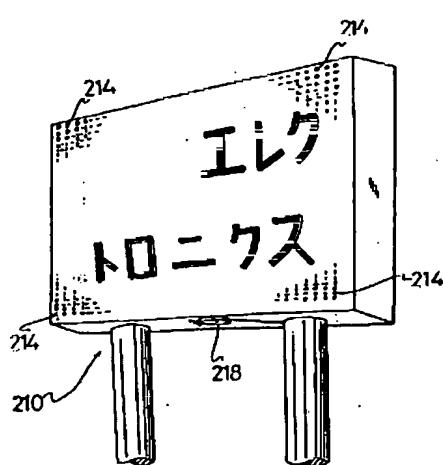
【図7】



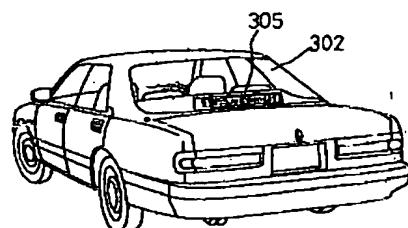
【図9】



【図6】

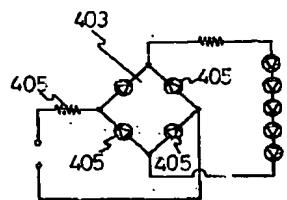


【図8】

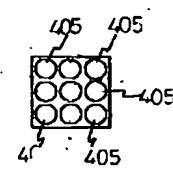


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【図10】



【図11】



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